

Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Complete if Known

RECEIVED

| | |
|------------------------|------------------------------------|
| Application Number | 10/043,374 |
| Filing Date | January 8, 2002 |
| First Named Inventor | Louis B. ROSENBERG |
| Group Art Unit | 2672 |
| Examiner Name | Unassigned |
| Attorney Docket Number | IMMR077/06US (New) IMM1P007D (Old) |

Technology Center 2600

1 of 3

PTO/SB/08A (08-00)

U.S. PATENT DOCUMENTS

| Examiner Initials* | Cite No. ¹ | U.S. Patent Document | | Name of Patentee or Applicant of Cited Document | Date of Publication of Cited Document MM-DD-YYYY |
|-----------------------|--------------------------|----------------------|--------------------------------------|---|---|
| | | Number | Kind Code ² (if known) | | |
| RLO | A1 | 6,104,158 | | Jacobus et al. | 08-15-2000 |
| | A2 | 6,057,828 | | Rosenberg et al. | 05-02-2000 |
| | A3 | 6,050,718 | | Schena | 04-18-2000 |
| | A4 | 6,046,727 | | Rosenberg et al. | 04-04-2000 |
| | A5 | 6,037,927 | | Rosenberg et al. | 03-14-2000 |
| | A6 | 6,004,134 | | Marcus et al. | 12-21-1999 |
| | A7 | 5,889,672 | | Schuler et al. | 03-30-1999 |
| | A8 | 5,880,714 | | Rosenberg et al. | 03-09-1999 |
| | A9 | 5,790,108 | | Salcudean et al. | 08-04-1998 |
| | A10 | 5,781,172 | | Engel et al. | 07-14-1998 |
| | A11 | 5,739,811 | | Rosenberg et al. | 04-14-1998 |
| | A12 | 5,734,373 | | Rosenberg et al. | 03-31-1998 |
| | A13 | 5,701,140 | | Rosenberg et al. | 12-23-1997 |
| | A14 | 5,691,898 | | Rosenberg et al. | 11-25-1997 |
| | A15 | 5,634,794 | | Hildreth | 06-03-1997 |
| | A16 | 5,631,861 | | Kramer | 05-20-1997 |
| | A17 | 5,629,594 | | Jacobus et al. | 05-13-1997 |
| | A18 | 5,591,924 | | Hilton | 01-07-1997 |
| | A19 | 5,589,828 | | Armstrong | 12-31-1996 |
| | A20 | 5,587,937 | | Massie et al. | 12-24-1996 |
| | A21 | 5,576,727 | | Rosenberg et al. | 11-19-1996 |
| | A22 | 5,559,432 | | Logue | 09-24-1996 |
| | A23 | 5,513,100 | | Parker et al. | 04-30-1996 |
| | A24 | 5,512,919 | | Araki | 04-30-1996 |
| | A25 | 5,467,763 | | McMahon et al. | 11-21-1995 |
| | A26 | 5,459,382 | | Jacobus et al. | 10-17-1995 |
| | A27 | 5,445,166 | | Taylor | 08-29-1995 |
| | A28 | 5,436,542 | | Petelin et al. | 07-25-1995 |
| | A29 | 5,435,729 | | Hildreth et al. | 07/1995 |
| | A30 | 5,429,140 | | Burdea et al. | 07-04-1995 |
| | A31 | 5,428,748 | | Davidson et al. | 06-27-1995 |
| | A32 | 5,417,696 | | Kashuba et al. | 05-23-1995 |
| | A33 | 5,414,337 | | Schuler | 05-09-1995 |
| | A34 | 5,412,880 | | Raab | 05-09-1995 |
| | A35 | 5,405,152 | | Katanics et al. | 04-11-1995 |
| | A36 | 5,402,582 | | Raab | 04-04-1995 |
| | A37 | 5,397,323 | | Taylor et al. | 03-14-1995 |
| | A38 | 5,396,266 | | Brimhall | 03-07-1995 |
| | A39 | 5,389,865 | | Jacobus et al. | 02-14-1994 |
| | A40 | 5,384,460 | | Tseng | 01-24-1995 |
| | A41 | 5,379,663 | | Hara | 01-10-1995 |
| | A42 | 5,368,484 | | Copperman et al. | 11-29-1984 |
| | A43 | 5,354,162 | | Burdea et al. | 10-11-1994 |
| | A44 | 5,351,692 | | Dow et al. | 10-04-1994 |
| | A45 | 5,296,846 | | Ledley | 03-22-1994 |
| | A46 | 5,289,273 | | Lang | 02-22-1994 |
| | A47 | 5,286,203 | | Fuller et al. | 02-15-1994 |
| | A48 | 5,275,565 | | Moncrief | 01-04-1994 |
| | A49 | 5,264,768 | | Gregory et al. | 11-23-1993 |

¹ Unique citation designation number.² See attached Kinds of U.S. Patent Documents.

Ricardo Garcia

9/29/04

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known

RECEIVED

| | |
|------------------------|------------------------------------|
| Application Number | 10/043,374 |
| Filing Date | January 8, 2002 |
| First Named Inventor | Louis B. ROSENBERG |
| Group Art Unit | 2672 |
| Examiner Name | Unassigned |
| Attorney Docket Number | IMMR077/06US (New) IMM1P007D (Old) |

Sheet 2 of 3

Technology Center 2600

| | | | | |
|-----|------|-----------|--------------------|------------|
| RLO | A50 | 5,259,894 | Sampson | 11-09-1993 |
| | A51 | 5,259,120 | Chapman et al. | 11-09-1993 |
| | A52 | 5,251,156 | Heier et al. | 10-05-1993 |
| | A53 | 5,251,127 | Raab | 10-05-1993 |
| | A54 | 5,243,266 | Kasagami et al. | 09-07-1993 |
| | A55 | 5,230,623 | Guthrie et al. | 07-27-1993 |
| | A56 | 5,228,356 | Chuang | 07-20-1993 |
| | A57 | 5,223,776 | Radke et al. | 06-29-1993 |
| | A58 | 5,220,260 | Schuler | 06-15-1993 |
| | A59 | 5,216,948 | Mitchell et al. | 06-30-1992 |
| | A60 | 5,209,661 | Hildreth et al. | 05/1993 |
| | A61 | 5,209,131 | Baxter | 05-11-1993 |
| | A62 | 5,204,824 | Fujimaki | 04-20-1993 |
| | A63 | 5,203,563 | Loper, III | 04-20-1993 |
| | A64 | 5,197,003 | Moncrief et al. | 03-23-1993 |
| | A65 | 5,193,963 | McAffee et al. | 03-16-1993 |
| | A66 | 5,189,806 | McMurtry et al. | 03-02-1993 |
| | A67 | 5,187,874 | Takahashi et al. | 02-23-1993 |
| | A68 | 5,185,561 | Good et al. | 02-09-1993 |
| | A69 | 5,184,319 | Kramer | 02-02-1993 |
| | A70 | 5,184,306 | Erdman et al. | 02-02-1993 |
| | A71 | 5,182,557 | Lang | 01-26-1993 |
| | A72 | 5,181,181 | Glynn | 01-19-1993 |
| | A73 | 5,148,377 | McDonald | 09-15-1992 |
| | A74 | 5,146,566 | Hollis, Jr. et al. | 09-08-1992 |
| | A75 | 5,143,505 | Burdea et al. | 09-01-1992 |
| | A76 | 5,142,931 | Menahem | 09-01-1992 |
| | A77 | 5,142,506 | Edwards | 08-25-1992 |
| | A78 | 5,139,261 | Openiano | 08-18-1992 |
| | A79 | 5,132,672 | Clark | 07-21-1992 |
| | A80 | 5,131,844 | Marinaccio et al. | 07-21-1992 |
| | A81 | 5,128,671 | Thomas, Jr. | 07-07-1992 |
| | A82 | 5,116,051 | Moncrief et al. | 05-26-1992 |
| | A83 | 5,113,179 | Scott-Jackson | 05-12-1992 |
| | A84 | 5,107,080 | Rosen | 04-21-1992 |
| | A85 | 5,103,404 | McIntosh | 04-07-1992 |
| | A86 | 5,095,303 | Clark et al. | 03-10-1992 |
| | A87 | 5,088,055 | Oyama | 02-11-1992 |
| | A88 | 5,088,046 | McMurtry | 02-11-1992 |
| | A89 | 5,076,517 | Ferranti et al. | 12-31-1991 |
| | A90 | 5,072,361 | Davis et al. | 12-10-1991 |
| | A91 | 5,050,608 | Watanabe et al. | 09-24-1991 |
| | A92 | 5,044,956 | Behensky et al. | 09-03-1991 |
| | A93 | 5,040,306 | McMurtry et al. | 08-20-1991 |
| | A94 | 5,007,300 | Siva | 04-16-1991 |
| | A95 | 5,007,085 | Greanias et al. | 04-09-1991 |
| | A96 | 4,983,901 | Lehmer | 01-08-1991 |
| | A97 | 4,982,504 | Söderberg et al. | 01-08-1991 |
| | A98 | 4,962,591 | Zeller et al. | 10-16-1990 |
| | A99 | 4,961,267 | Herzog | 10-09-1990 |
| | A100 | 4,961,138 | Gorniak | 10-02-1990 |
| | A101 | 4,949,119 | Moncrief et al. | 08-14-1990 |
| | A102 | 4,945,501 | Bell et al. | 07-31-1990 |
| | A103 | 4,945,305 | Blood | 07-31-1990 |
| | A104 | 4,942,545 | Sapia | 07-17-1990 |
| | A105 | 4,907,973 | Hon | 03-13-1990 |
| | A106 | 4,907,970 | Meenen, Jr. | 03-13-1990 |
| | A107 | 4,891,889 | Tomelleri | 01-09-1990 |
| | A108 | 4,888,877 | Enderle et al. | 12-26-1989 |
| | A109 | 4,879,556 | Duimel | 11-07-1989 |

Rosenberg

9/29/04

Substitute for form 1449A/PTO

Complete if Known

RECEIVED

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

| | |
|------------------------|------------------------------------|
| Application Number | 10/043,374 |
| Filing Date | January 8, 2002 |
| First Named Inventor | Louis B. ROSENBERG |
| Group Art Unit | 2672 |
| Examiner Name | Unassigned |
| Attorney Docket Number | IMMR077/06US (New) IMM1P007D (Old) |

JUL 30 2003

Technology Center 2600

Sheet 3 of 3

| | | | | |
|-----|------|-----------|-------------------|------------|
| RLO | A110 | 4,849,692 | Blood | 07-18-1989 |
| | A111 | 4,839,838 | LaBiche et al. | 06-13-1989 |
| | A112 | 4,819,195 | Bell et al. | 04-04-1989 |
| | A113 | 4,811,608 | Hilton | 03-14-1989 |
| | A114 | 4,803,413 | Kendig et al. | 02-07-1989 |
| | A115 | 4,800,721 | Cemenska et al. | 01-31-1989 |
| | A116 | 4,791,934 | Brunnett | 12-20-1988 |
| | A117 | 4,787,051 | Olson | 11-22-1988 |
| | A118 | 4,775,289 | Kazerooni | 10-04-1988 |
| | A119 | 4,769,763 | Trieb et al. | 09-06-1988 |
| | A120 | 4,750,487 | Zanetti | 06-14-1988 |
| | A121 | 4,703,443 | Moriyasu | 10-27-1987 |
| | A122 | 4,688,983 | Lindbom | 08-25-1987 |
| | A123 | 4,679,331 | Koontz | 07-14-1987 |
| | A124 | 4,676,002 | Slocum | 06-30-1987 |
| | A125 | 4,670,851 | Murakami et al. | 06-02-1987 |
| | A126 | 4,654,648 | Herrington et al. | 03-31-1987 |
| | A127 | 4,653,011 | Iwano | 03-24-1987 |
| | A128 | 4,638,798 | Shelden et al. | 01-27-1987 |
| | A129 | 4,632,341 | Repperger et al. | 12-30-1986 |
| | A130 | 4,593,470 | Davies | 06-10-1986 |
| | A131 | 4,571,834 | Fraser et al. | 02-25-1986 |
| | A132 | 4,538,035 | Pool | 08-27-1995 |
| | A133 | 4,477,973 | Davies | 10-23-1984 |
| | A134 | 4,398,889 | Lam et al. | 08-16-1983 |
| | A135 | 4,216,467 | Colston | 08-05-1980 |
| | A136 | 4,143,505 | Burdea et al. | 09-01-1992 |
| | A137 | 3,944,798 | Eaton | 03-16-1976 |
| | A138 | 3,923,166 | Fletcher et al. | 12-02-1975 |
| | A139 | 3,919,691 | Noll | 11-11-1975 |
| | A140 | 3,890,958 | Fister et al. | 06-24-1975 |
| | A141 | 3,531,868 | Stevenson | 10-06-1970 |
| | A142 | 2,906,179 | Bower | 09-29-1959 |
| | A143 | | | |
| | A144 | | | |
| ✓ | A145 | | | |

FOREIGN PATENT DOCUMENTS

| Examiner Initials* | Cite No. ¹ | Foreign Patent Document | | | Name of Patentee or Applicant of Cited Document | Date of Publication of Cited Document MM-DD-YYYY | T ⁴ |
|--------------------|-----------------------|-------------------------|---------------------|-----------------------------------|---|--|----------------|
| | | Office ¹ | Number ² | Kind Code ³ (if known) | | | |
| RLO | B1 | | WO9616397 | | | 05-30-1996 | |
| | B2 | | WO9520788 | | | 08-03-1995 | |
| | B3 | | WO9520787 | | | 08-03-1995 | |
| | B4 | | WO9502801 | | | 01-26-1995 | |
| | B5 | | WO9622591 | | | 07-25-1996 | |
| | B6 | UK | 2254911A | | | 10-21-1992 | |
| ✓ | B7 | JP | 434610A | | | 02-05-1992 | |

¹ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).

² For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

³ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

⁴ Applicant is to place a check mark here if English language Translation is attached.

Timothy Davis

9/29/04

Substitute for form 1449A/PTO

Complete if Known

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

RECEIVED

JUL 30 2003

Technology Center 2600

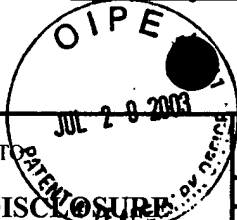
| | | | | | |
|-------|---|----|---|------------------------|------------------------------------|
| Sheet | 4 | of | 3 | Application Number | 10/043,374 |
| | | | | Filing Date | January 8, 2002 |
| | | | | First Named Inventor | Louis B. ROSENBERG |
| | | | | Group Art Unit | 2672 |
| | | | | Examiner Name | Unassigned |
| | | | | Attorney Docket Number | IMMR077/06US (New) IMM1P007D (Old) |

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

| Examine r Initials* | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
|---------------------------|--------------------------|--|----------------|
| RLO | C1 | "3D Human Interface Tool," Immersion Probe™, Immersion Corporation | |
| | C2 | "Cursor Waldo," Designer's Corner-Useful Technology for Your Idea File, Design News, March 7, 1993, pp. 63 | |
| | C3 | "Digital Control Loading," Agenda Item 10, Paper 3, International Air Transport Association, Seventh Flight Simulator Technical Sub-Committee Meeting, Montreal, Sept. 17-20, 1984 | |
| | C4 | "Foot-Operated Mouse," IBM Technical Disclosure Bulletin, April 1986, Vol. 28, No. 11 | |
| | C5 | "High Performance Model of the Immersion Probe." Immersion Probe-MD™, Immersion Corporation | |
| | C6 | "Proceedings of the IFIP Congress 65," International Federation for Information Processing, Information Processing 1965, Vol. 3, New York, May 24-29, 1965, pp. 506 | |
| | C7 | "The Personal Digitizer™," Immersion Corporation | |
| | C8 | Adelstein Bernard D. et al., "A High Performance Two Degree-of-Freedom Kinesthetic Interface," MIT 1992, pp. 108-112 | |
| | C9 | Adelstein, Bernard D. et al., "Design and Implementation of a Force Reflecting Manipulandum for Manual Control Research," 1992, pp. 1-24 | |
| | C10 | Akamatsu et al., "Multimodal Mouse: A Mouse-Type Device with Tactile and Force Display," 1994, Presence Vol. 3, pgs. 73-80 | |
| | C11 | Albers, F. Gerry, "Microcomputer Base for Control Loading," Naval Training Equipment Center 11 th NTEC-Industry Conference Proceedings, NAVTRAEQUIPCEN IH-306, Nov. 14-16, 1978 | |
| | C12 | Atkinson, William D. et al., "Computing with Feeling," Comput. & Graphics, Vol. 2, No. 2-E, pp. 97-103 | |
| | C13 | Baigrie, Stephen A., Reflectone Inc., "Electric Control Loading - A Low Cost, High Performance Alternative," American Defense Preparedness Association 12 th Interservice/Industry Training System Conference, Nov. 6-8, 1990 | |
| | C14 | Baradat, Jean and Lacroix, Michel, "Advanced Features in Control Loading and Motion Systems for Simulators," National Security Industrial Association 1 st Interservice/Industry Training Equipment Conference Proceedings, Nov. 27-29, 1981 | |
| | C15 | Batter, James J. et al., "Grove-1: A Computer Display to the Sense of Feel," pp. TA-4-188-TA-4-192 | |
| | C16 | Bejczy, Antal K., "The Phantom Robot: Predictive Displays for Teleoperation with Time Delay," IEEE 1990, pp. 546-550 | |
| | C17 | Brooks, Jr. et al., "Project GROPE, Haptic Displays for Scientific Visualization," Computer Graphics, Vol.2 4, #4, 1990, pgs 177-184 | |
| | C18 | Burdea, Grigore et al., "A Portable Dextrous Master with Force Feedback," Presence: Teleoperators and Virtual Environments, MIT Press, June 1991 | |
| | C19 | Burdea, Grigore et al., "Dextrous Telerobotics with Force Feedback - An Overview," Robotics 1991, Vol. 9 | |
| | C20 | Burdea, Grigore et al., "Distributed Virtual Force Feedback," IEEE, May 2, 1993, pp. 25-44 | |
| | C21 | Buttolo, Pietro et al., "Pen-Based Force Display for Precision Manipulation in Virtual Environments," IEEE March 1995, pp. 1-8 | |
| | C22 | Calvin McCoy Winey III, "Computer Simulated Visual and Tactile Feedback as an Aid to Manipulator and Vehicle Control", S.B. Massachusetts Institute of Technology, June 1981 | |
| | C23 | Colgate, J. Edward et al., "Implementation of Stiff Virtual Walls in Force-Reflecting Interfaces," September 22, 1993, pp. 1-9 | |
| | C24 | Cooper, Agenda Item 10, Paper 2, "Digital Flight Controls," "Digital Control Loading," International Air Transport Association, Seventh Flight Simulator Technical Sub-Committee Meeting, Montreal, Sept. 17-20-1984 | |
| | C25 | Corrao, J.M., "Control Loading," American Institute of Aeronautics and Astronautic's Flight Simulation Update 1988, Jan. 11-15, 1988 | |
| | C26 | Corrao, Joseph M., "Control Loading," American Institute of Aeronautics and Astronautic's Flight Simulation Update 1987, Jan. 12-16, 1987 | |
| | C27 | De Vries, L. et al., Agenda Item 10, Paper 1, "Performance Considerations, Design Criteria and Realization of a Digital Control Loading System," "Digital Control Loading," International Air Transport Association, Seventh Flight Simulator Technical Sub-Committee Meeting, Agenda Item 10, Montreal, Sept. 17-20, 1984 | |
| | C28 | Ellis, R.E. et al., "Design and Evaluation of a High-Performance Prototype Planar Haptic Interface," ASME December 3, 1993, DSC-Vol. 49, pp. 55-64 | |
| ✓ | C29 | Fischer, Patrick et al., "Specification and Design of Input Devices for Teleoperation," 1990 | |

Frank Davis

9/29/04



Substitute for form 1449A/PTO

Complete if Known

RECEIVED

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(use as many sheets as necessary)

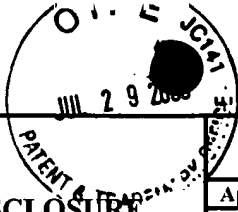
| | |
|------------------------|------------------------------------|
| Application Number | 10/043,374 |
| Filing Date | January 8, 2002 |
| First Named Inventor | Louis B. ROSENBERG |
| Group Art Unit | 2672 |
| Examiner Name | Unassigned |
| Attorney Docket Number | IMMR077/06US (New) IMM1P007D (Old) |

Technology Center 2600

Sheet 5 of 3

| | | |
|-----|-----|--|
| R20 | C30 | Fisher, S.S., et al., "Virtual Environment Display System," ACM 1986 Workshop on Interactive 3D Graphics October 23-24 |
| | C31 | Giel et al. "Digital Control Loading," Summary, International Air Transport Association, Seventh Flight Simulator Technical Sub-Committee Meeting, Item number 10, Montreal, Sept. 17-20, 1984 |
| | C32 | Gotow, J.K. et al., "Perception of Mechanical Properties at the Man-Machine Interface," IEEE 1987, pp.688-689 |
| | C33 | Hannaford, Blake et al., "Performance Evaluation of a Six-Axis Generalized Force-Reflecting Teleoperator," IEEE May/June 1991, Vol. 21, No. 3, pp. 620-633 |
| | C34 | Herndon, J.N. et al., "The State-of-the-Art Model M-2 Maintenance System," Proc. Of the 1984 National Topical Meeting on Robotics and Remote Handling in Hostile Environments, American Nuclear Society, pp. 59-65 |
| | C35 | Hildreth, Bruce L., Eyermann, Roger E. and Trankle, Tomas Dr., "DC Servo-Motors for High Performance High Reliability Control Loading in Flight Simulators," American Defense Preparedness Association 12 th Interservice/Industry Training System Conference, Nov. 6-8, 1990 |
| | C36 | Hirota et al., "Development of Surface Display," IEEE 0-7803-1363-1, 1993, pgs. 256-262 |
| | C37 | Howe, Robert D., "Task Performance with a Dextrous Teleoperated Hand System," Proceedings of SPIE, November 1992, Vol. 1833, pp. 1-9 |
| | C38 | Iwata et al., "Artificial Reality w/Force-Feedback: Development of Desktop Virtual Space with Compact Master Manipulator," Computer Graphics, Vol. 24, No. 4, 1990, pgs. 165-170 |
| | C39 | Iwata, Hiroo et al., "Volume Haptization," IEEE 1993, pp. 16-18 |
| | C40 | Iwata, Hiroo, "Pen-based Haptic Virtual Environment," Institute of Engineering Mechanics, University of Tsukuba, Japan, pp. 287-292 |
| | C41 | Jacobsen, S.C. et al., "High Performance, High Dexterity, Force Reflective Teleoperator II," ANS Topical Meeting on Robotics & Remote Systems," 1991, pp. 1-10 |
| | C42 | Kelley, et al., "MagicMouse: Tactile and Kinesthetic Feedback in the Human-Computer Interface Using an Electromagnetically Actuated Input/Output Device," Dept. of Elec. Eng., Univ. of British Columbia, Oct. 1993 |
| | C43 | Kenneth Meyer et al., "Survey of Position Trackers," The Massachusetts Institute of Technology Spring 1992, Vol. 1, No. 2, pp. 173-200 |
| | C44 | Kim, Won S. et al., "A Teleoperation Training Simulator with Visual and Kinesthetic Force Virtual Reality," Human Vision, Visual Proceedings, Proc. SPIE 1666, San Jose, CA, Feb. 1992 |
| | C45 | Kim, Won S. et al., "Graphics Displays for Operator Aid in Telemanipulation," IEEE 1991, pp. 1059-1067 |
| | C46 | Kotoku, Tetsuo, "A Predictive Display with Force Feedback and its Application to Remote Manipulation System with Transmission Time Delay," IEEE 1992, July 7-10, 1992, pp. 239-246 |
| | C47 | Kotoku, Tetsuo et al., "Environment Modeling for the Interactive Display (EMID) Used in Telerobotic Systems," IEEE November 3-5, 1991, pp. 99-1004 |
| | C48 | Massimo Andrea Russe, "The Design and Implementation of a Three Degree-of-Freedom Force Output Joystick," Department of Mechanical Engineering, May 11, 1990 |
| | C49 | McAfee, Douglas A., "Teleoperator System/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual," JPL January 1988, pp. 3-8, 11, and A-34 |
| | C50 | Meyer, Kenneth et al., "Survey of Position Trackers," The Massachusetts Institute of Technology, Spring 1992, Vol. 1, No. 2, pp. 173-200. |
| | C51 | Millman et al., "Design of a 4 Degree of Freedom Force-Reflecting Manipulandum with a Specified Force/Torque Workspace," IEEE CH2969-4, 1991, pgs. 1488-1493 |
| | C52 | Minsky, Margaret et al., "Feeling and Seeing: Issues in Force Display," ACM 1990, pp. 235-242 |
| | C53 | Noll, A. Michael, "Man-Machine Tactile Communication Dissertation," Polytechnic Institute of Brooklyn, June 1971, pp. 1-88 |
| | C54 | Norlin, Ken A., "Flight Simulation Software at NASA Dryden Flight Research Center," American Institute of Aeronautics and Astronautics's Flight Simulation Technologies Conference, Baltimore, MD, August 7-10, 1995 |
| | C55 | Ouh-young, Ming et al., "Force Display Performs Better than Visual Display in a Simple 6-D Docking Task," IEEE 1989, pp. 1462-1466 |
| | C56 | Ouh-young, Ming et al., "Using a Manipulator for Force Display in Molecular Docking," IEEE 1988, pp. 1824-1829 |
| | C57 | Ouh-young, Ming, "Force Display in Molecular Docking," Chapel Hill 1990, pp. 1-85 |
| | C58 | Paul Jerome Kilpatrick, "The Use of a Kinesthetic Supplement in an Interactive Graphics System", Xerox University Microfilms, Ann Arbor, Michigan 48106, © Copyright by Paul Jerome Kilpatrick 1976 |
| | C59 | Rinaldi, P., "Digital Control Loading - A Modular Approach," International Air Transport Association 6 th Meeting of the Flight Simulator Technical Sub-Committee, Montreal, June 1-4, 1982 |
| | C60 | Rolfe, J.M. and Staples, K.J., "Flight Simulation," eds. 1986 |
| ✓ | C61 | Rosenberg, Louis B. et al., "Perceptual Decomposition of Virtual Haptic Surfaces," IEEE, October 1993 |

Frank Davis 9/29/04



Substitute for form 1449A/PTO

Complete if Known

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

| | |
|------------------------|------------------------------------|
| Application Number | 10/043,374 |
| Filing Date | January 8, 2002 |
| First Named Inventor | Louis B. ROSENBERG |
| Group Art Unit | 2672 |
| Examiner Name | Unassigned |
| Attorney Docket Number | IMMR077/06US (New) IMM1P007D (Old) |

Sheet 6 of 3

| | | |
|-----|-----|---|
| R20 | C62 | Rosenberg, Louis B., "Perceptual Design of a Virtual Rigid Surface Contact," Center for Design Research, Stanford University, Armstrong Laboratory, AL/CF-TR-1995-0029, April 1993 |
| | C63 | Rosenberg, Louis B., "The Use of Virtual Fixtures as Perceptual Overlays to Enhance Operator Performance in Remote Environments," Air Force Material Command, September 1992, pp. 1-42. |
| | C64 | Rosenberg, Louis B., "The Use of Virtual Fixtures to Enhance Operator Performance in Time Delayed Teleoperation", Crew Systems Directorate Biodynamics and Biocommunications Division Wright-Patterson, Air Force Material Command, March 1993, pp. 1-45 |
| | C65 | Rosenberg, Louis B., "Virtual Fixtures as Tools to Enhance Operator Performance in Telepresence Environments," SPIE Telemanipulator Technology, 1993 |
| | C66 | Rosenberg, Louis B., "Virtual Haptic Overlays Enhance Performance in Telepresence Tasks," SPIE 1994 |
| | C67 | Rutherford, M., "Third Generation Digital Flight Controls," CAE Electronics, Ltd., The Royal Aeronautical Society, 1984 Spring Convention Future Applications and Prospects for Flight Simulation, May 9-10, 1984, paper number 15 |
| | C68 | Seidensticker, Steve, "Application of Microcomputers to the Simulator 'Linkage' Problem," National Security Industrial Association 4 th Interservice/Industry Training Equipment Conference Proceedings, Nov. 16-18, 1982 |
| | C69 | Smith, Geoffrey, "Call It Palpable Progress," Business Week, October 9, 1995, p. 93, 96 |
| | C70 | Snow, E. et al., "Compact Force-Reflecting Hand Controller," JPL, April 1991, Vol. 15, No. 3, Item No. 153, pp. 1-15a. |
| | C71 | Tan, Hong Z. et al., "Human Factors for the Design of Force-Reflecting Haptic Interfaces," Tan, Srinivasan, Eberman, & Chang, ASME WAM 1994, pp. 1-11 |
| | C72 | Tavkhelidze, D.S., "Kinematic Analysis of Five-Link Spherical Mechanisms," Mechanism and Machine Theory, 1974, Vol. 9, pp. 181-190 |
| | C73 | Wiker, Steven F. et al., "Development of Tactile Mice for Blind Access to Computers: Importance of Stimulation Locus, Object Size, and Vibrotactile Display Resolution," Proceedings of the Human Factors Society 35 th Annual Meeting 1991, pp. 708-712 |
| ✓ | C74 | Yamakita, M. et al., "Tele-Virtual Reality of Dynamic Mechanical Model," IEEE 992, pp. 1103-1110 |

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

174251 v1/RE
3QGB01!.DOC

Timothy Davis 9/29/09

RECEIVED

JUL 30 2003

Technology Center 2600

¹ Unique citation designation number.

² Applicant is to place a check mark here if English language Translation attached.